UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,603	12/20/2001	Arie Cornelis Besemer	019219-011	3910

21839 7590 11/05/2003

BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
MCINTOSH III, TRAVISS C	

ART UNIT	PAPER NUMBER
1623	

DATE MAILED: 11/05/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

File Copy

Office Action Summary	Application No.	Applicant(s)	
	09/913,603	BESEMER ET AL.	
	Examiner	Art Unit	
	Traviss C McIntosh	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the corresp ndence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

The Amendment filed July 25, 2003 has been received, entered into the record, and carefully considered. The following information provided in the amendment affects the instant application by:

Claims 1-2, and 6-13 have been amended.

Remarks drawn to rejections of Office Action mailed March 19, 2003 include:

Claim objections: which have been overcome by applicants' amendments and have been withdrawn.

Obvious double patenting rejections: which have been maintained for reasons of record.

112 2nd paragraph rejections: which have been overcome by applicants' amendments and have been withdrawn.

102(b) rejection: which has been overcome by applicants' amendments and has been withdrawn.

An action on the merits of claims 1-15 is contained herein below. The text of those sections of Title 35, US Code which are not included in this action can be found in a prior Office action.

Double Patenting

The rejection of claims 1-9 as being provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5, 7, and 11 of copending Application No. 09/913,596 ('596) is maintained for reasons of record. Although

the conflicting claims are not identical, they are not patentably distinct from each other because both applications claim a method of obtaining nitrosonium ions by oxidizing a nitroxyl compound with an oxidizing agent in the presence of a transition metal and a complexing agent.

Independent claim 1 of the instant application and independent claim 1 of copending '596 both claim: a method of obtaining nitrosonium ions by oxidizing a nitroxyl compound with an oxidizing agent in the presence of a transition metal and a complexing agent.

Dependent claim 2 of the instant application limits the nitroxyl compound to a di-tert-nitroxyl compound, especially TEMPO. Dependent claim 2 of copending '596 limits the nitroxyl compound to a di-tert-nitroxyl compound. Dependent claim 11 of copending '596 limits the nitroxyl compound to TEMPO.

Dependent claim 3 of the instant application and dependent claim 3 of copending '596 limits the transition metal to manganese, iron, cobalt, nickel, copper or vanadium.

Dependent claim 4 of the instant application and dependent claim 4 of copending '596 limit the complexing agent to a nitrogen containing compound.

Dependent claim 5 of the instant application and dependent claim 5 of copending '596 limit the complexing agent to a bipyridyl or a triazonane or a (poly)histadine.

Dependent claim 6 of the instant application is drawn to a method of oxidizing a carbohydrate with an oxidizing agent in the presence of a nitrosonium ion produced by claim 1 as a catalyst. Dependent claim 7 further limits the carbohydrate to an alpha-glucan or fructan and dependent claim 9 limits the carbohydrate to a hydroxyalkylated carbohydrate or a glycoside. Independent claim 1 of copending '596 is drawn to a method of oxidizing cellulose in the presence of a nitrosonium ion which is produced by the same method as the instant application's

method, as set forth supra. It would have been obvious to one of ordinary skill in the art that the methods overlap substantially, as cellulose is a carbohydrate, and more specifically a glucan, and it is the primary alcohol function of the compound which is oxidized, not necessarily the compound as a whole. Likewise, providing the limitation of the carbohydrate being a hydroxyalkylated carbohydrate or a glycoside does not affect the primary alcohol function of the carbohydrate, but rather the alcohol on the anomeric carbon of the carbohydrate, and would therefor still have the primary alcohol function available for an oxidation reaction. One of ordinary skill in the art would have a reasonable expectation of success in oxidizing compounds which have the same reactive primary alcohol group and which are in the same class of compounds, being carbohydrates, and more specifically glucans, with the same reactants/steps and obtaining equivalent results.

Dependent claim 8 of the instant application and dependent claim 7 of copending '596 both provide limitations which are of no patentable import on the process as claimed. Limitations of the structure of a product in a process claim have no patentable import. However, in an effort to provide compact prosecution, if applicants were to amend the claims wherein the limitations of the product were of patentable import, the claims would be obvious variants of each-other. Claim 8 of the instant application is drawn the process as set forth in claim 1 wherein a carbonyl-containing carbohydrate containing at least 1 cyclic monosaccharide chain group carrying a carbaldehyde group per 25 monosaccharide units and per average molecule being produced. Claim 7 of copending '596 is drawn to the process of claim 1 wherein a cellulose derivative containing at least 1 cyclic monosaccharide chain group carrying a carbaldehyde group per 25 monosaccharide units and per average molecule is produced. One of ordinary skill in the art

would expect the process as set forth supra to produce compounds which are the same wherein the only variant is based on the starting material, a carbohydrate or cellulose.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

It is noted that applicants state they will be willing to file a terminal disclaimer to obviate this rejection once the copending application is patented.

The rejection of claims 10-15 as being provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 31, 32, 34-36, and 39 of copending Application No. 09/914,182 ('182). Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications are drawn to oxidized carbohydrates which are not patentably distinct.

Independent claim 10 of the instant is drawn to an oxidized carbohydrate being selected from disaccharides, oligosaccharides and polysaccharides of the alpha-glucan, mannan, galactan, fructan, and chitin types and carbohydrate glycosides, containing at least 1 cyclic monosaccharide chain group carrying a carbaldehyde group per 25 monosaccharide units and per average molecule and further containing carboxyl and/or carboxymethyl groups. Independent claim 31 of copending '182 is drawn to an oxidized carbohydrate being selected from disaccharides, oligosaccharides and polysaccharides of the glucan, mannan, galactan, fructan, and chitin types and carbohydrate glycosides, containing at least 1 cyclic monosaccharide chain

group carrying a carbaldehyde group per 25 monosaccharide units and per average molecule. Dependent claim 36 of copending '182 adds the limitation of the oxidized carbohydrate further containing carboxyl and/or carboxymethyl groups. It would have been obvious to one of ordinary skill in the art that these oxidized carbohydrates are substantially overlapping, wherein the claims of '182 and the claims of the instant encompass a broad class of compounds, wherein the only species not encompassed by both is that of the beta-glucan type.

Dependent claim 11 of the instant application and dependent claim 32 of copending '182 both provide the limitation wherein the carbohydrate contains at least 5 monosaccharide units per average molecule.

Dependent claim 12 of the instant application and dependent claim 34 of copending '182 both limit the oxidized carbohydrate wherein at least part of the carbaldehyde groups has been converted to a group with the formula –CH=N-R or CH_2-NHR, wherein R is hydrogen, hydroxyl, amino, or a group R^1, OR^1, or NHR^1, in which R^1 is C_1-C_{20} alkyl, C_1-C_{20} acyl, a carbohydrate residue, or a group coupled with or capable of coupling with a carbohydrate residue.

Dependent claim 13 of the instant application and dependent claim 35 of copending '182 both limit the oxidized carbohydrate wherein at least a part of the carbaldehyde groups has been converted to a group with the formula $–CH(OR^3)-O-CH_2-COOR^2$ or $–CH(-O-CH_2-COOR^2)_2$, in which R^2 is hydrogen, a metal cation or an optionally substituted ammonium group, and R^3 is hydrogen or a direct bond to the oxygen atom of dehydrogenated hydroxyl group of the carbohydrate.

Dependent claims 14 and 15 of the instant application limit the oxidized carbohydrate claims 12 and 13 wherein the carbohydrates further contain carboxyl and/or carboxymethyl groups. It would have been obvious to one of ordinary skill in the art to incorporate this limitation in the claims, as it is well known in the art that primary alcohols are oxidized to aldehydes and then further to acids, therefor comprising carboxyl groups.

The methods and compounds of the instant application must contain new and non-obvious variations over the copending applications to be patentably distinct.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

It is noted that applicants state they will be willing to file a terminal disclaimer to obviate this rejection once the copending application is patented.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Traviss C McIntosh whose telephone number is 703-308-9479. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on 703-308-4624. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

James O. Wilson
Supervisory Patent Examiner
Art Unit 1623

Traviss C. McIntosh III
October 30, 2003